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(54)

Colouring shampoo.

(57)

A shampoo composition for treating hair, comprising a
anionic shampoo base, auxiliary surfactant, and a direct dye,
useful in dyeing natural fibres, and in particular for dyeing
human hair.

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COMPOSITIONS

The invention relates to dye compositions useful in dyeing natural fibres, and in particular for dyeing human hair.

Direct dyes are commonly used to colour fibrous materials, for instance human hair, for a limited time, and are particularly useful when repeated changes in colour are required. However, direct dyes often impart a low colour intensity to a substrate and safety considerations may prevent the use of more concentrated compositions .

It has now been found that the colour intensity of direct dyes deposited from shampoo-based compositions can be increased by the use of auxiliary surfactants, the auxiliary surfactant facilitating higher deposition of dye onto the substrate.

Accordingly, the present invention provides a dye composition for treating hair, comprising an anionic shampoo base, auxiliary surfactant, and a direct dye.

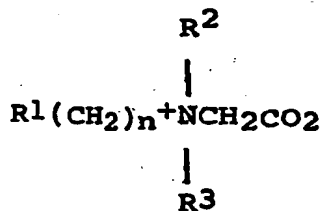
Suitably, the direct dye is an anthraquinone, azo, nitro such as for example a nitrophenylene diamine, basic, triarylmethane, or disperse dye, or any combination thereof.

Anionic shampoo bases comprise a major proportion of an anionic surfactant (hereinafter the 'primary surfactant') and may optionally include additional surfactants (hereinafter the 'secondary surfactants') which may be anionic, non-ionic, or cationic surfactants to modify the cleaning, foaming and conditioning properties of the shampoo base.

The auxiliary surfactant is a cationic or betaine surfactant, or is a mixture of such surfactants.

Suitable primary surfactants for use in the compositions of the invention include, sodium and ammonium lauryl sulphates, sodium and ammonium lauryl ether sulphates, sodium olefin sulphonates, substituted ammonium lauryl sulphates and substituted ammonium lauryl ether sulphates, fatty acid alkanolamide sulphosuccinates and fatty acid sarcosinates.

Suitable betaine surfactants include compounds of the formula:-



wherein;

R^1 is a C_{10-18} alkyl group or a C_{9-17} alkyl carbonylimino group;

R² is a C₁₋₃ alkyl group or a hydroxy C₁₋₃ alkyl group;

R³ is a C₁₋₃ alkyl group or a hydroxy C₁₋₃ alkyl group;

and n is an integer from 1 to 5.

Suitable nonionic secondary surfactants include fatty acid alkanolamides, polyalkoxylated fatty acid amides, polyalkoxylated sorbitan esters of long chain fatty acids, polyalkoxylated long chain alkylamine oxides and amido amine oxides of long chain fatty acids may also be used.

Suitable cationic secondary or auxiliary surfactants include polyethoxylated quaternary ammonium compounds, quaternised guar gum derivatives, quaternised cellulose derivatives, synthetic polymers formed by the condensation of polyglycols with polyamines, also polymers formed by combining vinyl pyrrolidone units with dimethylamine ethyl methacrylate units and homo polymers of dimethyl diallyl ammonium chloride.

Preferably, the betaine surfactant is a cocamido alkyl betaine such as cocamido propyl betaine.

The shampoo base may be present in the composition of the invention from 0.1 to 50% by weight of the composition. Preferably, the shampoo base comprises from 5 to 20% by weight of the composition.

The total auxiliary surfactant may be present in the composition of the invention from 0.1 to 50% by weight of the composition. Preferably, the auxiliary surfactant comprises from 0.1 to 15% by weight of the composition.

When the auxiliary surfactant comprises a betaine surfactant, the betaine surfactant is suitably present in an amount of from 1 to 10% by weight of the composition.

When the auxiliary surfactant comprises a cationic surfactant, the cationic surfactant is suitably present in an amount of from 1 to 5% by weight of the composition.

The dye or when a mixture of dyes is used, each dye may be present in the composition of the invention at from 0.01 to 5% by weight, preferably 0.01 to 3%.

Total dye content being in the range 0.01 to 10% by weight of the composition.

In a preferred aspect the present invention provides a shampoo composition comprising:

from 0.01% to 10% by weight of a direct dye;
from 0.1% to 50% by weight of an anionic surfactant;
and
from 0.1% to 50% by weight of a cationic surfactant;
and/or
from 0.1% to 50% of a betaine surfactant .

It is to be understood that the cationic surfactant in the above composition may be part of the anionic shampoo base or the auxiliary surfactant or both.

Dye compositions of the invention may comprise conventional ancillary ingredients such as conditioning agents, opacifiers, pearlescent agents, sequestrants, perfumes, preservatives, glycols, water.

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02 The pH of the compositions of the invention suitably
03 may be from 4 to 10, preferably from 5 to 8. If
04 necessary the pH may be adjusted using conventional
05 agents.
06

07 The present invention also provides a process for the
08 preparation of a dye composition, which process
09 comprises the following main steps:
10

- 11 a. preparing the anionic shampoo base by admixing the
12 primary surfactant and if required any secondary
13 surfactant with water at ambient or slightly
14 elevated temperature;
15
- 16 b. admixing the auxiliary surfactant, pre-dissolved
17 in water if necessary, and the anionic shampoo
18 base at ambient or slightly elevated temperature;
19
- 20 c. adding the direct dye;
21
- 22 d. and finally adjusting the pH of the composition to
23 within the range of from 4 to 10, preferably from
24 5 to 8.
25

26 Further toiletries additives may be added at any
27 convenient stage in the process preferably before final
28 pH adjustment.
29

30 The direct dye may be in dry powder form or may be
31 predispersed, suspended or dissolved in a suitable
32 solvent, preferably a glycol, for example glycerin or
33 propylene glycol.
34

35 The invention further provides a method for treating
36 non-human or human hair comprising applying an
37 effective, non-toxic amount of a composition as
38 hereinbefore defined to the hair.
39

Th compositions of the invention will now b
illustrated by way of the following Example.

Example

	<u>% by weight</u>
*Monoethanolamine lauryl ether sulphate	8.75
*Polyoxyethylene (3) lauramine oxide	1.00
Cocamido propyl betaine	4.50
*Glycerin	4.50
2-Nitro-p-phenylene diamine	0.40
*Preservatives, perfume, etc.	qs
*Water	qs 100.0

* = conventional anionic shampoo base

Comparative Tests

A number of test formulations were prepared together with a corresponding number of control formulations in which the auxiliary surfactant was omitted. A number of hair tresses were prepared using light brown virgin human hair, each tress of hair (1g) being bound with waxed twine.

Test Formulations

Formulation 1

Weight Percent

Ammonium lauryl ether sulphate	12.0
Polyoxyethylene (20) Sorbitan mono-oleate	4.0
**Cocamido propyl betaine	4.0
Glycerin	4.5
2-Nitro- <u>p</u> -phenylene diamine	0.3
4-Nitro- <u>o</u> -phenylene diamine	0.3
Perfume	qs
Preservatives	qs
Deionised water	qs to 100.0

Formulation 2

Weight Percent

Monoethanolamine lauryl ether sulphate	10.0
Cocamido propyl amine oxide	1.2
**Bis (2-hydroxyethyl) tallow ammonium	
ethanoate	4.0
Glycerin	4.5
2-Nitro- <u>p</u> -phenylene diamine	0.3
4-Nitro- <u>o</u> -phenylene diamine	0.3
Perfume	qs
Preservatives	qs
Deionised water	qs to 100.0

Formulation 3

W ight Percent

Monoethanolamine lauryl ether sulphate	10.0
Linoleic diethanolamide	4.0
**Cocamido propyl betaine	4.0
Glycerin	4.5
2-Nitro-p-phenylene diamine	0.3
4-Nitro-o-phenylene diamine	0.3
Perfume	qs
Preservatives	qs
Deionised water	qs to 100.0

Formulation 4

Weight Percent

Monoethanolamine lauryl ether sulphate	10.0
Linoleic diethanolamide	4.0
**Bis (2-Hydroxy ethyl) tallow ammonium	
ethanoate	4.0
Glycerin	4.5
2-Nitro-p-phenylene diamine	0.3
4-Nitro-o-phenylene diamine	0.3
Perfume	qs
Preservatives	qs
Deionised water	qs to 100.0

Note

**Indicates the auxiliary surfactant in each of the above test formulation, omitted from the control formulations.

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Test Procedure

Each tress (1g) was dampened with water then treated with a sample (1g) of a test or a control formulation and left for 10 minutes before rinsing with warm water and drying. The colour, shade, and intensity of tresses dyed with each test formulation was compared with that of the tresses dyed with the corresponding control formulation.

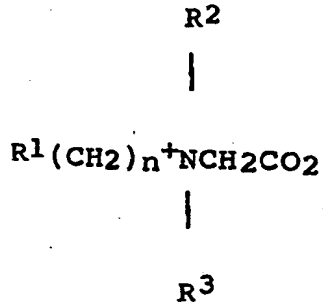
Results

Formulation	Colour	Comparison with control formulation
1	Warm, hazel brown	Brighter colour, stronger red shade
2	Bright golden brown	More intense shade with gold highlights
3	Golden brown	More intense
4	Golden brown	More intense, with bright gold highlights

CLAIMS

1. A dye composition for treating hair, comprising an anionic shampoo base, auxiliary surfactant, and a direct dye.
2. A dye composition as claimed in claim 1, wherein the anionic shampoo base comprises a major proportion of an anionic surfactant and optionally additional anionic, non-ionic or cationic surfactants.
3. A dye composition as claimed in claim 1 or claim 2, wherein the auxiliary surfactant is a cationic or betaine surfactant, or is a mixture of such surfactants.
4. A dye composition as claimed in claim 3, comprising:
 - from 0.01% to 10% by weight of a direct dye;
 - from 0.1% to 50% by weight of an anionic surfactant; and
 - from 0.1% to 50% by weight of a cationic surfactant; and/or
 - from 0.1% to 50% of a betaine surfactant.

5. A dye composition as claimed in claim 3 or claim 4 wherein the betain surfactant is a compound of the formula:-



wherein;

R¹ is a C₁₀₋₁₈ alkyl group or a C₉₋₁₇ alkyl carbonylimino group;

R² is a C₁₋₃ alkyl group or a hydroxy C₁₋₃ alkyl group;

R³ is a C₁₋₃ alkyl group or a hydroxy C₁₋₃ alkyl group;

and n is an integer from 1 to 5.

6. A dye composition as claimed in any one of claims 3 to 5, wherein the betaine surfactant is a cocamido alkyl betaine.
7. A dye composition as claimed in claim 6, wherein the betaine surfactant is cocamido propyl betaine.

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8. A dye composition as claimed in any one of claims 1 to 7, wherein the direct dye is an anthraquinone, azo, nitro such as a nitrophenylene diamine, basic, triarylmethane, or disperse dye, or any combination thereof.
 9. A dye composition as claimed in any one of claims 1 to 9, wherein the dye or when a mixture of dyes is used, each dye is present in the composition at from 0.01 to 5% by weight.
 10. A dye composition as claimed in any one of claims 1 to 9, wherein the total dye content is in the range of 0.01 to 10% by weight.

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54 **Colouring shampoo.**

57 A shampoo composition for treating hair, comprising a
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EUROPEAN SEARCH REPORT

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Application number

EP 84 10 9141

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	FR-A-2 112 489 (UNILEVER N.V.) * Claims 1-4; example 2 *	1-4, 8-10	A 61 K 7/13
A	FR-A-2 096 377 (H. CURTIS) * Claims 1-3 *	1, 5-7	
A	GB-A- 986 712 (CHESEBROUGH-POND'S INC.) * Claims 1-16 *	1, 5-7	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			A 61 K
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24-04-1986	Examiner DECOCKER L.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : immediately available document		T : the very principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	